

A¹
adhesion, so that paper dust is liable to adhere on the surface of the roll. This disadvantageously reduces the friction coefficient. If the NCO index is reduced, the crosslinking density is reduced, thereby disadvantageously deteriorating the compression resistance and the abrasion resistance.

A²
(Page 2, line 24 to page 3, line 9): In accordance with a first aspect of the present invention to achieve the aforesaid object, there is provided a urethane composition for a sheet transport roll, the composition comprising: (A) a polyether polyol blend containing polytetramethyleneether glycol (PTMG) and polypropylene glycol (PPG) in a weight ratio of PTMG/PPG = 99/1 to 50/50; (B) a polyisocyanate; and (C) a chain lengthening agent; the urethane composition in a cured state having a hardness of not smaller than 40, and a crosslinking density of 0.15 to 0.8 mmol/cm³ or an allophanate bond concentration of 0.03 to 0.07 mmol/g.

A³
(Page 13, lines 4-7): The urethane composition in a cured state is required to have a hardness of not smaller than 40, and a crosslinking density of 0.15 to 0.8 mmol/cm³ or an allophanate bond concentration of 0.03 to 0.07 mmol/g.

A⁴
(Page 13, lines 8-24): If the hardness is lower than 40 ~~40°~~, the resulting roll tends to have an increased adhesion, so that paper dust is liable to adhere onto the roll thereby reducing the friction coefficient of the roll. The hardness is measured with a load of 9.8 N by means of a durometer of type A in accordance with Japanese Industrial Standard K 6253. If the crosslinking density is smaller than 0.15 mmol/cm³, the abrasion resistance and compression resistance of the resulting roll

A4
tend to be deteriorated. If the crosslinking density is greater than 0.8 mmol/cm^3 , the resulting roll tends not to have a high friction coefficient because of its high hardness. If the allophanate bond concentration is smaller than 0.03 mmol/g , the resulting roll tends to have a reduced abrasion resistance. If the allophanate bond concentration is greater than 0.07 mmol/g , the resulting roll tends not to have a high friction coefficient because of its high hardness.

A5
(Page 13, line 25 to page 14, line 4): It is particularly preferred that the urethane composition in the cured state has a hardness of 50 to 70, and a crosslinking density of 0.4 to 0.6 mmol/cm^3 or an allophanate bond concentration of 0.04 to 0.05 mmol/g .

A6
(Page 19, lines 15-17): The surface hardness of each of the sheet transport rolls was measured with a load of 9.8 N by means of a durometer of Type A in accordance with Japanese Industrial Standard K 6253.

(Page 22, Table 4):

Table 4 (parts)						
	Examples					
	1	2	3	4	5	6
Urethane prepolymer	100	100	100	100	100	100
(Type)	A	B	C	A	A	A
Ion conductive agent ^{*1}	-	-	-	1	-	-
Plasticizer ^{*2}	-	-	-	-	30	-
Micro-capsules ^{*3}	-	-	-	-	-	3
Chain lengthening agent						
1,4-BD	3	3	3	3	3	3
TMP	2	2	2	2	2	2
Hardness	68	70	66	66	52	64
Crosslinking density(mm ³ /cm ³)	0.55	0.58	0.51	0.45	0.27	0.48
Initial friction coefficient	1.9	1.9	1.9	1.9	2	2
Friction coefficient after durability test	1.9	1.9	1.9	1.9	2	2
Abrasion amount (μ m)	44	41	46	45	42	50
Transportation ability	○	○	○	○	○	○

*1: Lithium perchlorate

*2: DOP (dioctyl phthalate)

*3: EXPANCEL 091DE80 (average particle diameter of 80 μ m) available from Japan Fillite Co., Ltd.

(Page 23, Table 5):

Table 5		(parts)			
	Examples				
	6	7	8	9	
Urethane prepolymer	100	100	100	100	
(Type)	A	A	D	E	
Ion conductive agent ^{*1}	3	-	-	-	
Plasticizer ^{*2}	-	50	-	-	
Micro-capsules ^{*3}	-	-	-	-	
Chain lengthening agent					
1,4-BD	3	3	3	3	
TMP	2	2	2	2	
Hardness	65	40	71	64	
Crosslinking density(mmol/cm ³)	0.42	0.15	0.57	0.45	
Initial friction coefficient	1.9	2	1.8	1.9	
Friction coefficient after durability test	1.9	1.8	1.7	1.9	
Abrasion amount (μm)	48	60	41	59	
Transportation ability	○	○	○	○	

*1: Lithium perchlorate

*2: DOP (dioctyl phthalate)

*3: EXPANCEL 091DE80 (average particle diameter of 80 μm) available from Japan Fillite Co., Ltd.

(Page 24, Table 6):

Table 6 (parts)

	Comparative Examples					
	1	2	3	4	5	6
Urethane prepolymer	100	100	100	100	100	100
(Type)	a	b	c	d	e	f
Chain lengthening agent						
1,4-BD	3	3	2.5	3	3.5	3
TMP	2	2	2	1.5	1.5	2
Hardness	72	65	37	45	80	62
Crosslinking density(mmol/cm ³)	0.58	0.4	0.16	0.11	0.85	0.4
Initial friction coefficient	1.5	1.8	1.9	1.9	1.6	1.8
Friction coefficient after durability test	1	1.5	0.6	1.9	1.6	1.5
Abrasion amount (μm)	40	101	149	174	20	85
Transportation ability	Δ	\times	\times	\times	\times	Δ

(Page 22, Table 4):

Table 7 (parts)

	Examples					
	11	12	13	14	15	16
Urethane prepolymer	100	100	100	100	100	100
(Type)	F	G	H	F	F	F
Ion conductive agent ^{*1}	-	-	-	1	-	-
Plasticizer ^{*2}	-	-	-	-	30	-
Micro-capsules ^{*3}	-	-	-	-	-	3
Chain lengthening agent						
1,4-BD	3	3	3	3	3	3
TMP	2	2	2	2	2	2
Hardness	69	71	67	67	53	65
Crosslinking density(mmol/cm ³)	0.05	0.05	0.05	0.05	0.04	0.05
Initial friction coefficient	1.9	1.8	1.9	1.9	2	2
Friction coefficient after durability test	1.9	1.8	1.9	1.9	2	2
Abrasion amount (μm)	42	41	44	43	42	49
Transportation ability	○	○	○	○	○	○

*1: Lithium perchlorate

*2: DOP (dioctyl phthalate)

*3: EXPANCEL 091DE80 (average particle diameter of 80 μm) available from Japan Fillite Co., Ltd.

(Page 28, Table 8):

Table 8 (parts)

	Examples				
	17	18	19	20	21
Urethane prepolymer	100	100	100	100	100
(Type)	F	F	I	J	F
Ion conductive agent ^{*1}	3	-	-	-	-
Plasticizer ^{*2}	-	50	-	-	-
Micro-capsules ^{*3}	-	-	-	-	-
Chain lengthening agent					
1,4-BD	3	3	3	3	2.6
TMP	2	2	2	2	1.6
Hardness	66	40	71	65	75
Allophanate bond concentration (mmol/g)	0.05	0.03	0.05	0.05	0.07
Initial friction coefficient	1.9	2	1.8	1.9	1.8
Friction coefficient after durability test	1.9	1.8	1.7	1.9	1.7
Abrasion amount (μm)	47	59	40	57	24
Transportation ability	○	○	○	○	○

*1: Lithium perchlorate

*2: DOP (dioctyl phthalate)

*3: EXPANCEL 091DE80 (average particle diameter of $80\mu\text{m}$) available from Japan Fillite Co., Ltd.

(Page 29, Table 9):

Table 9 (parts)

	Comparative Examples					
	7	8	9	10	11	12
Urethane prepolymer	100	100	100	100	100	100
(Type)	g	h	c	d	e	i
Chain lengthening agent						
1,4-BD	3	3	2.5	3	3.5	3
TMP	2	2	2	1.5	1.5	2
Hardness	73	66	37	45	80	63
Allophanate bond concentration (mmol/g)	0.05	0.05	0	0	0.08	0.05
Initial friction coefficient	1.5	1.8	1.9	1.9	1.6	1.8
Friction coefficient after durability test	1	1.4	0.6	1.9	1.6	1.5
Abrasion amount (μm)	39	100	149	174	20	83
Transportation ability	Δ	\times	\times	\times	\times	Δ